Fertilization of synergids.—Occasional anomalies have been noted even in 8-nucleate embryo sacs developed from a single megaspore. PERSIDSKI[7] describes additional cases in *Delphinium elatum*. Usually the development of the sac is normal, the egg having a vacuole at its micropylar end, while the synergids have the vacuole at the opposite end. In some cases the position of the vacuoles is reversed, so that the synergids have the organization of eggs and the egg has the appearance of a synergid. One case is figured in which the two male nuclei are fusing with the nuclei of two such synergids. It will be remembered that GUIGNARD figured two embryos of *Naias major* which may have arisen in this way. PERSIDSKI also figures an egg apparatus of five cells; three eggs and two synergids. This emphasizes what most of us have long believed, that the various nuclei of the sac are homologous and may replace each other in function.—CHARLES J. CHAMBERLAIN.

A new Araucarioxylon.—Dr. STOPES[8] has described a new *Araucarioxylon* (*A. novae-zelandii*) from the Cretaceous of New Zealand. It is described as new because it differs greatly from the more imperfect specimens of fossil araucarians hitherto recorded from that region. Its chief differential feature is the extreme development of the rows of thickened tracheids on either side of the rays, which are filled with large "resin-spools." By "resin-spools" is meant deposits of resin in the form of large disks opposite the middle of the pith rays, the lateral extensions of these disks running up and down the containing wall for some distance. The new species has also much more regular and strongly marked annual rings than usual among araucarians, which is held to be good evidence that New Zealand had well marked seasons during the Middle Cretaceous.—J. M. C.

Cases of suspended vitality.—BULLER and CAMERON[9] have recorded some remarkable cases of suspended vitality. They have shown that the "fruit bodies" of *Daedalea bicolor* can retain their vitality when dried, kept in the dark, and exposed to ordinary air at room temperatures, for at least seven and a half years; while those of *Schizophyllum commune* endured the same treatment for at least five years and seven months. The fruit bodies of the latter fungus, after previous drying by exposure to phosphorus pentoxide *in vacuo*, retained their vitality after being kept for 16.5 months in a vacuum at a pressure of not more than 0.1 mm. of mercury, in the dark at room temperatures;

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[7] PERSIDSKI, D., Einige Fälle anomaler Bildung des Embryosackes bei *Delphinium elatum*. Mém. Soc. Nat. Kiew **23**:97–112. *figs. 6.* 1914.

[8] STOPES, MARIE C., A new *Araucarioxylon* from New Zealand. Ann. Bot. **28**: 341–350. *figs. 3. pl. 20.* 1914.

[9] BULLER, A. H. REGINALD, and CAMERON, A. T., On the temporary suspension of vitality in the fruit bodies of certain Hymenomycetes. Trans. Roy. Soc. Canada **6**:73–78. 1912.

and these same fruit bodies were found to retain their vitality when dried, kept *in vacuo*, and at a temperature of liquid air for three weeks.—J. M. C.

Seedling anatomy.—In continuing his investigations of the seedling anatomy of Sympetalae, LEE[10] has published an account of the Compositae, having examined about 50 species, well distributed through the tribes. The general conclusions are as follows: all seedlings are either diarch or tetrarch; variations in vascular anatomy occur not only in nearly related species, but in different individuals of the same species, the inference being that seedling anatomy "is of no value in questions of affinity"; the evolution of the vascular structures of seedlings is probably not an extremely slow process; tetrarchy and diarchy have probably been "interchanged" several times during the evolution of angiosperms; physiological factors are probably not sufficient to account for all the structures found in seedlings.—J. M. C.

The origin of Ascomycetes.—In a paper which reviews all the available data, approximately 100 papers being cited, DODGE[11] discusses the relationships of the red algae and the Ascomycetes. It is a very useful summary of our knowledge of the reproductive structures of these two groups, as well as a clearly presented argument in favor of the view that the Ascomycetes are a monophyletic group and have been derived from the red algae. The reproductive structures of the two groups are compared in detail, and the interesting transitions shown by *Collema* and *Ascobolus* are described.—J. M. C.

Flora of Panama.—STANDLEY[12] has issued the first of a series of papers preliminary to a flora of Panama. The present paper contains descriptions of some 40 new species from tropical America, which are distributed among 18 genera belonging to the Cyperaceae, Leguminosae, Gentianaceae, and Rubiaceae. Two new generic names are proposed, namely *Nothophlebia* and *Geocardia* (*Geophila* D. Don, not Berg.) of the Rubiaceae, and the following genera have been revised: *Sommera* (5), *Watsonamra* (11), and *Cobaea* (18).—J. M. GREENMAN.

Variation in Oenothera ovata.—Mrs. BRANDEGEE[13] has discovered that this Californian species of *Oenothera* has a remarkable range of variation. Apparently it is a plexus of "elementary species" quite as numerous as have been found in *O. Lamarckiana* and *O. biennis*.—J. M. C.

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[10] LEE, E., Observations on the seedling anatomy of certain Sympetalae. II. Compositae. Ann. Botany **28**:303–329. *figs. 2.* 1914.

[11] DODGE, B. O., The morphological relationships of the Florideae and the Ascomycetes. Bull. Torr. Bot. Club **41**:157–202. *figs. 13.* 1914.

[12] STANDLEY, PAUL C., Studies of tropical American Phanerogams, no. 1. Contrib. U.S. Nat. Herb. **17**:427–458, *pls. 24–31.* 1914.

[13] BRANDEGEE, KATHARINE L., Variation in *Oenothera ovata*. Univ. Calif. Publ. Bot. **6**:41–50. *pls. 8, 9.* 1914.